SECTION I—CLAIMS

Amendment to the Claims:

      This listing of the claims will replace all prior versions and listings of claims in the application. Claims 30, 33-35, 38-40, and 43-44 are amended herein. Claims 1-29 remain canceled herein without prejudice. No new claims are added.

Listing of Claims:

1-29. (Canceled)

30. (Currently Amended) A method comprising:

receiving content for transmission from a plurality of more than two transmit antennae, wherein the received content is a vector of input symbols (s) of size Nc x 1, wherein Nc is the number of subcarriers of the multicarrier wireless communication channel; and

generating a rate-one, space-frequency code matrix from the received content for transmission via the plurality of more than two transmit antennae by dividing the vector of input symbols into a number G of groups to generate subgroups and multiplying at least a subset of the subgroups by a constellation rotation precoder to produce a number G of pre-coded vectors (v_g), wherein successive symbols from the same group transmitted from the same antenna are at a frequency distance that is multiples of ~~NG~~$\underline{MG}$ subcarrier spacings, wherein M represents a number of transmit antennae.

31. (Previously Presented) A method according to claim 30, further comprising:

dividing each of the pre-coded vectors into a number of LM x 1 subvectors; and

creating an M x M diagonal matrix $D_{s_g,k} = diag\{\Theta^T_{M\times(k-1)+1}s_g, \cdots, \Theta^T_{M\times k}s_g\}$, where $k=1...L$ from

the subvectors.

32. (Previously Presented) A method according to claim 31, further comprising:

interleaving the L submatrices from the G groups to generate an M x Nc space-frequency matrix.

33. (Currently amended) A method according to claim 32, wherein the space-frequency matrix

provides M N L channel diversity, while preserving a code rate of 1 for any number of the

transmit antennae ~~antenna(s)~~ M, receive antenna(s) N and channel tap(s) L.

34. (Currently amended) A method according to claim 30, wherein the space-frequency matrix

provides M N L channel diversity, while preserving a code rate of 1 for any number of the

transmit antennae ~~antenna(s)~~ M, receive antenna(s) N and channel tap(s) L.

35. (Currently Amended) An apparatus comprising:

a diversity agent to receive content for transmission via a multicarrier wireless communication

channel, wherein the received content is a vector of input symbols (**s**) of size Nc x 1,

wherein Nc is the number of subcarriers of the multicarrier wireless communication

channel, and to generate a rate-one, space-frequency code matrix from the received

content for transmission on the multicarrier wireless communication channel from a

plurality of more than two transmit antennae by dividing the vector of input symbols into

a number G of groups to generate subgroups and multiplying at least a subset of the

subgroups by a constellation rotation precoder to produce a number G of pre-coded

vectors (v_g), wherein successive symbols from the same group transmitted from the same

antenna are at a frequency distance that is multiples of ~~NG~~MG subcarrier spacings,

wherein M represents a number of transmit antennae.

36. (Previously Presented) An apparatus according to claim 35, the diversity agent further

comprising:

a space-frequency encoding element, responsive to the pre-coder element, to divide each of the

pre-coded vectors into a number of $LM \times 1$ subvectors, and to create an $M \times M$ diagonal

matrix $D_{s_g,k} = diag\{\Theta^T_{M \times (k-1)+1} s_g, \cdots, \Theta^T_{M \times k} s_g\}$, where $k=1...L$ from the subvectors.

37. (Previously Presented) An apparatus according to claim 36, wherein the space-frequency

encoding element interleaves the L submatrices from the G groups to generate an $M \times Nc$

space-frequency matrix.

38. (Currently amended) An apparatus according to claim 37, wherein the space-frequency

matrix provides $M N L$ channel diversity, while preserving a code rate of 1 for any

number of the transmit antennae ~~antenna(s)~~ M, receive antenna(s) N and channel tap(s) L.

39. (Currently amended) An apparatus according to claim 35, wherein the space-frequency

matrix provides $M N L$ channel diversity, while preserving a code rate of 1 for any

number of the transmit antennae ~~antenna(s)~~ M, receive antenna(s) N and channel tap(s) L.

40. (Currently Amended) A system comprising:

a number M of omnidirectional antennas, wherein M comprises more than two omnidirectional

antennas; and

a diversity agent, to receive content for transmission via a multicarrier wireless communication

channel, wherein the received content is a vector of input symbols (s) of size $Nc \times 1$,

wherein Nc is the number of subcarriers of the multicarrier wireless communication

channel, and to generate a rate-one, space-frequency code matrix from the received

content for transmission on the multicarrier wireless communication channel from at least

a subset of the M omnidirectional antennas by dividing the vector of input symbols into a

number G of groups to generate subgroups and multiplying at least a subset of the

subgroups by a constellation rotation precoder to produce a number G of pre-coded

vectors (v_g), wherein successive symbols from the same group transmitted from the same antenna are at a frequency distance that is multiples of ~~NG~~ _MG_ subcarrier spacings.

41. (Previously Presented) A system according to claim 40, the diversity agent further comprising:

a space-frequency encoding element, responsive to the pre-coder element, to divide each of the pre-coded vectors into a number of LM x 1 subvectors, and to create an M x M diagonal matrix $D_{s_g,k} = diag\{\Theta^T_{M \times (k-1)+1} \mathbf{s}_g, \cdots, \Theta^T_{M \times k} \mathbf{s}_g\}$, where $k=1...L$ from the subvectors.

42. (Previously Presented) A system according to claim 41, wherein the space-frequency encoding element interleaves the L submatrices from the G groups to generate an M x Nc space-frequency matrix.

43. (Currently amended) A system according to claim 42, wherein the space-frequency matrix provides $M\,N\,L$ channel diversity, while preserving a code rate of 1 for any number of the omnidirectional antennas ~~transmit antenna(s)~~ M, receive antenna(s) N and channel tap(s) L.

44. (Currently amended) A system according to claim 40, wherein the space-frequency matrix provides $M\,N\,L$ channel diversity, while preserving a code rate of 1 for any number of the omnidirectional antennas ~~transmit antenna(s)~~ M, receive antenna(s) N and channel tap(s) L.